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Indoor air quality: tackling the challenges of the invisible

Acting for healthy indoor air: from measurement to remediation

Introduction

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2. ACTING FOR HEALTHY INDOOR AIR: FROM MEASUREMENT TO REMEDIATION

Numerous solutions are emerging to tackle the challenges of indoor air quality, whether industry-wide approaches such as those of the construction sector, innovative technological solutions using artificial intelligence or sensors, or mechanisms based on biological remediation.

BUILD BETTER TO BREATHE BETTER

A first approach to the challenges of indoor air quality is a technical one, that primarily concerns the construction industry. Construction is a sector with a large action potential on issues relating to indoor air quality. The industry is striving to reduce pollution at the source as well as developing labels to guarantee the ability of various materials and processes in providing good indoor air quality. Austrian architect Dietmar Feichtinger explains that preventing poor air quality starts at the design phase. The specific constraints and requirements of a building and characteristics of its future occupants have to be examined closely to suggest remediation solutions that are both appropriate and correctly scaled.

COMBINING ENERGY EFFICIENCY WITH HEALTHY BUILDINGS

Improving the energy performance of buildings requires increasing airtightness. However, this should not come at the expense of indoor air quality. The keys lie in conciliating energy efficiency targets with the chemical, biological and particulate parameters of indoor air quality, throughout the operational life of a building. The approach championed by OFIS Veolia, presented by Sabine Fauquez and Frédéric Bouvier, rests on three pillars: continuous assessment of air quality; management of ventilation and air treatment installations; and involvement of building occupants in improving indoor air quality. Projects run by OFIS in schools in France and the Czech Republic have proven highly instructive.

WHETHER DATA OR BIOLOGY, SCIENCE IS AT THE SERVICE OF AIR QUALITY

In terms of innovation, one of the central challenges consists in choosing techniques and technologies that align with a building's varied uses and deliver data that is both robust and reliable. Karine Léger, head of Airparif – an accredited non-profit whose members are economic actors, research bodies and representatives of public organizations from the Paris region – presents several initiatives designed to foster innovation impacting air quality, including the AIRLAB project for testing and assessing new approaches to measuring and treating pollution. Artificial intelligence is one area in which technology is developing, as demonstrated by AirVisual, a company founded in China by Yann Boquillod. Another complementary solution lies in using the pollution-abating properties of plants and their root microbiome. Bill Wolverton and Mark Nelson present the conclusions of studies undertaken most notably for NASA on phytoremediation, the process by which plants and their associated microorganisms absorb polluting agents to purify air and water.

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